



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re patent
appln. of: Kosta L. PELONIS
Serial No.: 09/996,842
Filed: November 29, 2001
For: **PORTABLE HEATER**
Examiner: John A. Jeffery
Art Unit: 3742
Att'y Docket: 305-01

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Alex R. Sluzas, Reg. No. 28,669
Dated: February 5, 2004

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APPEAL BRIEF

Sir:

This appeal brief is submitted under certificate of mailing on Thursday, February 5, 2004 in support of Notice of Appeal mailed under Certificate of Mailing on November 5, 2003, in response to the Examiner's Action mailed July 7, 2003 in the above-referenced patent application finally rejecting claims 1-7. A petition for a one month extension of time accompanies this appeal brief.

I. Real Party in Interest

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02 FC:2402

165.00 OP

This application has been assigned to Pelonis USA, Ltd. a Delaware corporation.

II. Related Appeals and Interferences

There are no related appeals or interferences.

III. Status of the Claims

The claims in the application are claims 1-7.

No claims stand allowed.

Claims 1-7 stand finally rejected.

The claims on appeal are claims 1-7.

IV. Status of Amendments

The claims have not been amended during prosecution before the Examiner.

V. Summary of the Invention

The present invention provides a portable heater comprising a sealed radiator containing a diathermal fluid. The radiator includes a plurality of tubular radiator units. Each of the tubular radiator units has respective upper portions and respective lower portions. The portable heater further includes at least one electric heating element positioned within the sealed radiator, as well as a fan positioned above the sealed radiator for directing air on the upper portions of the tubular radiator units. The fan is effective to cool the upper portions of the tubular units. This enhances thermal convection of the diathermal fluid within the tubular radiator units.

The present invention thus advantageously reduces the surface area required for transferring heat from the electric heating element via the diathermal fluid to the room air. Thus, at least one fewer tubular radiator unit is required, with a concomitant reduction in the cost of manufacturing the portable heater. In addition, the radiator can be maintained at a cooler temperature. It has been calculated that for every 10 degrees Celsius that the operating temperature can be reduced, the power consumption per tubular radiator unit can be concomitantly reduced by 250 watts. Thus, the power consumption of the portable heater can be advantageously reduced. Further, the present invention provides more rapid heat distribution from the portable heater to the room.

Preferably, the heater includes a centrifugal fan driven by an electric motor. It is also preferred that a quiet fan be employed. To that end, it is preferred that the electric motor operates at low rpm, preferably at less than 2500 rpm, and more preferably at less than 1000 rpm. Preferably, the portable heater includes a cover enclosing the fan.

VI. Issue Presented

Whether the Examiner erred in his conclusion that the combination of U.S. Patent 2,075,323 ("Woolley") and U.S. Patent 4,870,253 ("De'Longhi") renders claims 1-7 unpatentable as obvious under 35 U.S.C. 103(a).

VII. Grouping of Claims

The claims comprise a single group.

VIII. Argument

The Examiner's rejection is not correct.

The Examiner's comments in the Action mailed July 29, 2003 (Paper No. 10) reflect an incorrect construction of applicant's claims, and a misapplication of the cited art.

The Examiner characterizes Woolley as disclosing a covered, sealed radiator heater comprising a plurality of tubular radiator units and fans 18 positioned above the radiator units for directing air onto the radiator units' upper portions enhancing thermal convection, citing to Fig. 1 and page 1, col. 2, lines 27-42.

The Examiner contends that the claims differ from the previously cited prior art in calling for the heater to be portable. The Examiner states that portable radiators are well known in the art as shown by De'Longhi, particularly pointing to col. 1, lines 5-10 where an electrically-heated mobile radiator with diathermal fluid is disclosed so that the heater can be transported to different rooms.

The Examiner concludes that in view of De'Longhi, it would have been obvious to one of ordinary skill in the art to provide a mobile radiator in lieu of the fixed radiator of Woolley so that the heater can be transported to different rooms thereby heating only desired rooms.

The Examiner's conclusion is not correct.

Woolley discloses a conventional steam radiator 15 shrouded with a casing 20 and having a cover 17 on top in which are installed a plurality of electric motor-driven fans 19 for directing air downward between through the radiator 15.

The Examiner's characterization of Woolley is mistaken. Woolley does disclose a "sealed" radiator unit in the sense of that disclosed by De'Longhi or that of the present invention.

The heating radiator 15 disclosed by Woolley "may be a part of an ordinary type of heating system, supplied with a suitable heating medium such as steam" (page 1, col. 2, lines 8-9). Utility doors 30 can be provided to provide access to supplied fittings such as a shut off valve 15a and a steam trap 15b (page 2, col. 2, lines 6-13). Woolley's radiator operates in the conventional manner, in the sense that the diathermal fluid, such as steam, is circulated to and through the radiator by conventional means at a location remote from the radiator. The radiator within Woolley's radiator cabinet is not "sealed" with respect to the passage of diathermal fluid.

This is an important difference.

The Examiner contends that because Woolley's diathermal fluid is alleged "sealed" within the overall heating system, applicant's arguments are not commensurate with the scope of applicant's claims. This is not correct. First, the Examiner admits that the Woolley's diathermal fluid circulates in and out of the radiator, so Woolley's radiator certainly is not "sealed" in that sense. Second, applicant's independent claim 1 calls for a portable heater comprising a sealed radiator. Applicant respectfully submits that in this context "sealed" must necessarily be understood in the sense that the applicant argues, and that the Examiner's understanding arises from misconstruing the claim language. Woolley's radiator is not sealed, it is the system in which it is embedded that is sealed. Taken alone, Woolley's radiator will leak water onto the floor, because either end will be open. Furthermore, Woolley's radiator will be inoperative.

Applicant respectfully submits that there is no reason to believe that cooling the exterior of the radiator enclosed in Woolley's radiator cabinet by circulating air over the

exterior would enhance the circulation or the convection of diathermal fluid within the radiator. The Examiner argues that the fans of Woolley, which flow air directly on the tubular radiator units, directly influence the temperature of the fluid within, thus inherently enhance thermal convection. Applicant respectfully submits that the Examiner's premises do not support his conclusion.

The interior of the Woolley's radiator can be expected to be filled with both liquid water and steam under pressure. It is by no means clear that the direct influence of Woolley's fans would be to enhance convection of the diathermal fluid. This is unphysical speculation by the Examiner.

Applicant respectfully suggests that it is commonly understood that the heating medium passes through the radiator and does not circulate within the radiator. Steam enters one end, cools on the interior surfaces of the radiator to liquid water, and the liquid water is collected and withdrawn from the other end of the radiator. This is a two-phase system. Cooling the exterior surfaces of the radiator may enhance heat transfer, because steam condenses at a greater rate on the corresponding interior surfaces, but there is no reason to believe in a system subject to forced circulation, that cooling the exterior surface would cause steam to convect within the radiator. One of ordinary skill in the art would understand this.

Consequently, Woolley would not provide one of ordinary skill in the art with any motivation to modify De'Longhi's portable radiator in the manner suggested by the Examiner.

The combination suggested by the Examiner would defeat De'Longhi's expressed purpose of producing a uniform air circulation so as to eliminate the difference in temperature between the lower region proximate the floor of the room and the region proximate the ceiling thereof (col. 1, lines 42-48).

In the combination suggested by the Examiner, the temperature difference between the floor and the ceiling of the room containing the Examiner's hypothetical portable heater would be exacerbated because the airflow is directed from the top of the radiator cabinet. Reconsideration and reversal of the rejection entered are respectfully requested for these reasons.

The Examiner further states that the claims differ from the previously cited prior art in calling for an electric heating element within the sealed radiator. The Examiner notes that providing an electric heating element within a sealed radiator is conventional and well known in the art as evidenced by De'Longhi, noting electric heater 4 within the sealed radiator in Fig. 1 so that the diathermal fluid is heated within the radiator as compared to heated at a remote location. The Examiner further states that by providing an *in situ* electric heater, the radiator fluid can be heated, yet still be portable to transport to other rooms.

The Examiner concludes that in view of De'Longhi, it would have been obvious to one of ordinary skill in the art to provide an electric heater in lieu of a centralized, remote heat source of Woolley so that the fluid is heated within the radiator thus enabling portability to transport the radiator to other rooms.

This conclusion is incorrect.

Providing Woolley's radiator cabinet with an *in situ* heater would not make it portable. Woolley's invention is intended for use with a conventional steam radiator, well known in the art to constitute a very heavy object. Combined with Woolley's radiator cabinet and multiple air circulation fans, as well as the source of heat hypothesized by the Examiner, a conventional steam radiator would be anything but portable because of its great weight.

Further, the combination of the two references cited by the Examiner simply does not provide applicant's presently claimed invention. The new combination proposed by the Examiner does not meet limitations of the present claims, and no *prima facie* case is established thereby. To the extent that they can be combined, the resulting device would have a fan underneath the thermal units (De'Longhi) as well as fans above the thermal units (Woolley). Only by making an improper reconstruction of applicant's invention, does the Examiner select the fans above the thermal units and discard the fan below the thermal units of the hypothetical device resulting from the combination suggested by the Examiner. Similarly, only by making an improper reconstruction of applicant's invention does the Examiner discard two of the three fans disclosed by Woolley.

The Examiner's contends that in view of its advantages in terms of portability, weight and relatively quick heat up and cool down, using an electric heater in Woolley's device in lieu of steam heat would have been readily apparent to one of ordinary skill in the art. The Examiner's contention confirms that reconstructed nature of this rejection. If an electric heating element is substituted for steam heat, why would one of ordinary skill in the art use a radiator at all? Why a radiator with a diathermal fluid? Substituting an electric resistive heat source for the steam heat obviates the need for either diathermal fluid or radiator, leaving only a fan and a resistive heater – a nearly universal form of electric heater irrelevant to the present issues.

Reconsideration and reversal of the rejection entered are respectfully requested for this reason also.

The Examiner further contends that the claims differ from the previously cited prior art in calling for a centrifugal fan. The Examiner also contends that centrifugal fans

in portable radiators is conventional and well known in the art as evidenced by De'Longhi noting col. 4, line 22.

The Examiner concludes that in view of De'Longhi, it would have been obvious to one of ordinary skill in the art to provide a centrifugal fan in the previously described apparatus so that a blower was used that requires relatively small space yet has a high airflow rate thus facilitating portability.

The Examiner's conclusion is not correct. Merely substituting a centrifugal fan for the conventional fans illustrated in Woolley would not make the combination of the conventional steam radiator disclosed in Woolley and the Woolley radiator enclosure portable. Further, if the substitution were made, there is nothing in either reference to disclose or suggest to one of ordinary skill in the art that such a centrifugal fan be provided above the thermal units as in the presently claimed invention rather than below the thermal units such as disclosed in De'Longhi.

The Examiner also contends that the claims also differ from the previously cited prior art in calling for the electric motor driving the fan at low rpm.

The Examiner asserts that it is well known in the art that the speed of the fan in heat radiators is directly proportional to the convective heating effect. That is, the Examiner explains, driving a fan at higher speed will result in a greater convective heating effect as compared to lower speeds, citing Woolley on page 2, lines 19-28, as disclosing driving a fan in conjunction with a radiator for heating a room at reduced speed.

The Examiner concludes that it would have been obvious to one of ordinary skill in the art to provide a reduced fan speed setting in the previously described apparatus so that a reduced convective heating effect was achieved thereby avoiding overheating of the space to be heated.

This conclusion does not render applicant's presently claimed invention obvious. There is nothing in either of the cited references nor in the combination thereof to motivate one of ordinary skill in the art to select the speed of the fan in order to reduce fan noise, an object of the present invention. Further, providing a variable speed fan as suggested by the Examiner to avoid overheating the space to be heated would not meet the requirements of the presently claimed invention. The fan of the present invention must be "effective to cool the upper portions of the tubular units to enhance the thermal convection of the diathermal fluid" according to claim 1. There is no reason to believe that the simple relationship between the fan speed and the extent to which the room is heated would obtain in the heater of the present invention, because increasing the fan speed would appear to simultaneously increase heat transfer from the surface of the tubular units and possibly decrease thermal convection of the diathermal fluid within the units as the surface was brought to a more uniform temperature by virtue of the increase air circulation. While the Examiner characterizes applicant's argument as mere speculation, applicant respectfully submits that it is an explanation consistent with the understanding of one of ordinary skill in the art.

The motivation of one of ordinary skill in the art to make the combination of references suggested by the Examiner is at issue. Applicant respectfully contends that one of ordinary skill in the art would not be motivated to make the combination suggested, because she would expect to achieve the convection, and hence enhanced heating, achieved by the present invention. One of ordinary skill in the art would not simply ignore the actual operation of Woolley's radiator, which the Examiner characterizes as applicant's speculation.

The Examiner further contends that regarding claims 5 and 6, no criticality is seen in the specific motor rpm values, and that it is well settled that where the general

conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation, citing In re Aller, 220 F.2d 454, 456, 105 USPQ 233,235 (CCPA 1955). The Examiner also notes that courts have held that even if "applicant's modification results in great improvement and utility over the prior art, it may still not be patentable if the modification was within the capabilities of one skilled in the art, unless the claimed ranges 'produce a new and unexpected result from which is different in kind and not merely in degree from the results of the prior art,'" citing In re Huang, 100 F.3d 135, 139, 40 U.S.P.Q. 2d 1685 (Fed. Cir. 1996).

The Examiner concludes that in the present case, one of ordinary skill in the art would know that reducing the motor speed would correspondingly reduce the airflow rate of the fan (citing to page 2, col. 2, lines 19-29 of Woolley) and the specific rpm values claimed are within the scope of routine experimentation by one of ordinary skill in the art.

This is not correct. The cited art does not disclose or suggest to one of ordinary skill in the art that a fan should be provided to cool the upper portions of the tubular units in order to enhance the circulation of diathermal fluid. Consequently, the prior art does not disclose or suggest the variable that the Examiner hypothesizes is being optimized. Reconsideration and reversal of the rejection are respectfully requested for this reason.

Reconsideration and reversal of the Examiner's rejection entered under 35 U.S.C. 103(a) over Woolley in view of De'Longhi are respectfully requested for these reasons.

IX. Conclusion

As all claims as amended are believed to be in condition for allowance, an early favorable action and reversal of the rejection entered by the Examiner are earnestly solicited.

February 5, 2004

Order No. 2049

Respectfully submitted,



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APPENDIX

CLAIMS ON APPEAL:

1. A portable heater comprising:
 - (a) a sealed radiator containing a diathermal fluid, the radiator including a plurality of tubular radiator units, the tubular radiator units having respective upper portions and respective lower portions;
 - (b) at least one electric heating element positioned within the sealed radiator;
 - (c) a fan positioned above the sealed radiator for directing air on the upper portions of the tubular radiator units, the fan being effective to cool the upper portions of the tubular units to enhance thermal convection of the diathermal fluid within the tubular radiator units.
2. A portable heater according to claim 1 wherein the fan comprises a centrifugal fan.
3. A portable heater according to claim 2 further comprising an electric motor for driving the centrifugal fan.
4. A portable heater according to claim 3 wherein the electric motor operates at low rpm.
5. A portable heater according to claim 4 wherein the electric motor operates at less than 2500 rpm.
6. A portable heater according to claim 5 wherein the electric motor operates at less than 1000 rpm.
7. A portable heater according to claim 1 further comprising a cover enclosing the fan.